Project - Phase 3 Submission Report

Project Title:	Inventory Management System
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Date of Submission:	26/08/2025

1. Abstract

The Inventory Management System project is developed using Oracle APEX to streamline stock management, supplier tracking, and purchase monitoring. The system allows users to add, update, and track products in real time, manage supplier details, and monitor stock levels. Automated alerts are generated when inventory reaches low levels. Reports are available for better decision-making, ensuring efficiency, accuracy, and transparency in inventory operations.

2. System Requirements

2.1 Hardware Requirements

• Processor: Intel Core i3 or higher
• RAM: 4 GB minimum (8 GB recommended)
• Storage: 500 GB HDD / 256 GB SSD
• Internet: 1 Mbps or higher

2.2 Software Requirements

• Operating System: Windows 10 / Linux / macOS
• Database: Oracle Database 21c
• Development: Oracle APEX (v23.2)
• Middleware: Oracle REST Data Services (ORDS)

3. Tools and Versions

• Oracle APEX – Version 23.2
• Oracle Database – Version 21c
• SQL Workshop – Enabled
• Page Designer – Enabled
• APEX Tools – REST Data Services (ORDS), Email Notification

4. Flow Chart

Flow: User → Login → Dashboard → Manage Products → Manage Suppliers → Purchases → Stock Monitoring → Reports

Modules:
1. Authentication & Role Management
2. Product Management
3. Supplier Management
4. Purchase Records
5. Stock Alerts & Monitoring
6. Reporting & Analytics

5. Code Implementation (Sample SQL / PL/SQL)

```
CREATE TABLE Products (
ProductID INT PRIMARY KEY,
ProductName VARCHAR2(100) NOT NULL,
Quantity INT NOT NULL,
Price DECIMAL(10,2),
SupplierID INT,
Description VARCHAR2(250)
);

CREATE TABLE Suppliers (
SupplierID INT PRIMARY KEY,
SupplierName VARCHAR2(100) NOT NULL,
ContactNumber VARCHAR2(15),
Email VARCHAR2(100),
Address VARCHAR2(200)
);

CREATE TABLE Purchases (
PurchaseID INT PRIMARY KEY,
ProductID INT REFERENCES Products(ProductID),
Quantity INT NOT NULL,
PurchaseDate DATE NOT NULL,
SupplierID INT REFERENCES Suppliers(SupplierID)
);
```

6. Project Hurdles & Solutions

• Hurdle 1: Maintaining accurate stock updates for multiple purchases
■ Solution: Implemented PL/SQL triggers to auto-update stock after each purchase.

• Hurdle 2: Low stock alerts not reaching users
■ Solution: Configured Oracle APEX email notifications with scheduled jobs.

• Hurdle 3: Handling large supplier/product records efficiently
■ Solution: Used APEX Interactive Reports with filters and search options.

7. Output (Screenshots)

Screenshots of application pages like:
• Login Page
• Dashboard
• Product Entry Form
• Supplier Details Page
• Stock Monitoring Page
• Reports

8. Conclusion

The project successfully automates manual inventory processes, improves transparency, and reduces errors in stock management. It provides real-time monitoring and efficient supplier management, thereby increasing productivity.

9. Future Enhancements

• Mobile App Integration for easy stock updates
• Barcode/RFID integration for automatic stock entry
• AI-based demand forecasting to optimize inventory levels